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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/560,432

01/30/2006

Bernhard Braunecker

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03/31/2008

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P.O. BOX 320850

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EXAMINER

RATCLIFFE, LUKE D

ART UNIT

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3662

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,432	<b>Applicant(s)</b> BRAUNECKER ET AL.	
	<b>Examiner</b> LUKE D. RATCLIFFE	<b>Art Unit</b> 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 1, 8, 11, 13, 16, 17, 20 and 21** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

When the claim states a limitation and then proceeds to define the limitation in a preferred manner this renders the claim indefinite. Example in claim 1 the applicant claims "a detector, preferably having a CMOS or CCD microcamera" it is unclear if the applicant is claiming a detector or specifically a CMOS or CCD microcamera. Proper correction is required.

**Claims 2-7, 9, 10, 12, 14, 15, 18, and 19** are rejected because they include all the limitations of the parent claims.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 3, 5-7, 10, 13-16, 18, and 21 are rejected under 35****U.S.C. 102(b) as being anticipated by Neal (6376819).**

Referring to **claims 1 and 13**, Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column1 line 20-35).

Referring to **claim 3**, Neal shows a radiation source, medium, and detector are arranged so that the radiation is fed substantially perpendicular to at least one surface of the medium during a passage through the medium (figure 4).

Referring to **claim 5**, Neal shows that the detector is in the form of a Shack-Hartmann wavefront sensor (column 1 line 20-35).

Referring to **claim 6**, Neal shows the detector is mounted indirectly or directly on a container containing the medium (figure 3).

Referring to **claim 7**, Neal shows the detector has a detector surface which resolves in two dimensions (figure 3).

Referring to **claim 10**, Neal shows at least one deflection element is arranged in the beam path from the radiation source to the detector (figure 6).

Referring to **claim 14**, Neal shows on evaluation of the signals, an analysis of the deviation of the wavefront from the wavefront before an interaction with the medium is effected (column1 line 20-35).

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Referring to **claim 15**, Neal shows on recording of the signals and or on evaluation of the signals, a reconstruction of the wavefront before an interaction of the medium is effected (column1 line 20-35).

Referring to **claim 16**, Neal shows on recording of the signals individual image points of the detector are selected (column 2 line 60-column 3 line 31).

Referring to **claim 18**, Neal shows on recording the signals different apertures are correlated with one another (column 2 line 60-column 3 line 21).

Referring to **claim 21**, Neal shows the diffractive element is a hologram or grating (figure 4).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819) in view of Kitajima (6057916).**

Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column1 line 20-35).

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However Neal does not show that the medium has an inclination sensitive surface is a liquid.

Kitajima shows a similar optical inclinometer that uses a liquid (figure 1). It would have been obvious to modify Neal to use the liquid as shown by Kitajima because this is a combination of prior art elements according to known methods to yield predictable results.

**Claims 4 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819) in view of Yertoprakhov (6476943).**

Referring to claims 4 and 20, Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column 1 line 20-35). However Neal does not show the detector has at least one diffractive element which is arranged on an array of microlenses.

Yertoprakhov shows at least one diffractive element which is arranged on an array of microlenses (figure 12). It would have been obvious to modify Neal to use the microlenses as shown by Yertoprakhov because this is a combination of prior art elements according to known methods to yield predictable results.

**Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819) in view of Neal (6184974).**

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Referring to **claim 8**, Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column 1 line 20-35). However Neal does not show the detector and radiation source are arranged on a common base.

Neal (6184974) shows the detector and radiation source are arranged on a common base (figure 1b). It would have been obvious to modify Neal (6376819) because this is a combination of prior art elements according to known methods to yield predictable results.

Referring to **claim 9**, Neal shows Neal shows a radiation source, medium, and detector are arranged so that the radiation is fed substantially perpendicular to at least one surface of the medium during a passage through the medium (figure 4).

**Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819) in view of Kablan (4290043).**

Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor

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or the detector is in the form of a wavefront sensor (column1 line 20-35).

However Neal does not show at least one diffractive and/or optical gradient element, in particular a Fresnel lens is arranged in the beam path from the radiation source to a detector.

Kablan shows at least one diffractive and/or optical gradient element, in particular a Fresnel lens is arranged in the beam path from the radiation source to a detector (figure 8 Ref 88). It would have been obvious to modify Neal because this is a combination of prior art elements according to known methods to yield predictable results.

**Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819) in view of Shira (20010024270).**

Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column1 line 20-35). However Neal does not show a geodetic device in particular a telemeter or plumb staff having an inclinometer of claim 1.

Shira teaches an optical inclinometer in a telemeter or plumb staff. It would have been obvious to modify Neal because this is the use of a known technique to improve similar devices in the same way.



**Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819) in view of Hirohara (20030011757).**

Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column1 line 20-35). However Neal does not show evaluation of the signals, the form function is derived by means of a polynomial approach.

Hirohara shows a similar device that shows evaluation of the signals, the form function is derived by means of a polynomial approach (paragraph 145). It would have been obvious to modify Neal because this is a combination of prior art elements according to known methods to yield predictable results.

**Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neal (6376819).**

Neal shows an optical inclinometer including a radiation source (figure 6 Ref 60, a medium of which is inclination dependent (figure 6 Ref 34, a detector (figure 6 Ref 38, an evaluation unit (figure 6 Ref 44), a radiation source and detector being arranged so that the wavefront is focused indirectly or directly onto the detector (figure 4 and 6), and that the detector has a wavefront sensor or the detector is in the form of a wavefront sensor (column1 line 20-35). However Neal does not explicitly teach compensating for vibrations and/or

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random fluctuations but this is well known and adds no new or unexpected results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUKE D. RATCLIFFE whose telephone number is (571)272-3110. The examiner can normally be reached on 10:00-5:00 M-Sun.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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LDR

/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662